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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MAYEKAR, KISHOR

ART UNIT

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1795

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/784,867	Applicant(s) FINK ET AL.	
	Examiner Kishor Mayekar	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 and 34-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-33 and 49-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 30 November 2009 has been entered.

Response to Amendment

2. The amendment of 30 November 2009 has been entered. New claims 19 and 50 have been introduced. Claims 1-18 and renumbered claims 34-48 have been withdrawn. Claim 18 and renumbered claims 20-33, 49 and 51-55 have been amended. Claims 18-33 and 49-55 are pending in this application with claims 18 and 49 being independent claims.

Claim Objections

3. Claim 18 is objected to because of the following informalities: the missing "and" between the recited structures "an UV light source" and "a catalytic target structure". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 22, the recitation "openings" is confusing or redundant since perforation is claimed in independent claim 18 and perforations equate to openings.

In claim 23, the same is applied to claim 22 to the recitation "openings".

In claim 24, the same is applied to claim 22 to the recitation "openings". The recitation "open area" is confusing as to its identical recitation in claim 23. And the recitation "between 0% and 95%" is confusing when the perforations comprise approximately 50% as recited in claim 18.

Claim Rejections - 35 USC § 103

6. Claims 18-24 and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata et al. (US Pat. No. 6,238,631 B1) in view of Speer '963, Kim (WO 02/102,497 A1), and Goswami (US Pat. No. 5,933,702). Ogata's

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invention is directed to an apparatus for removing organic or inorganic pollutants in a gas or liquid stream with a photocatalyst. Ogata discloses in Fig. 8, an embodiment having a plurality of porous filter plates 2i arranged around a UV light source 4 and spirally extending along the axis of the light source 4, where the porous filter plates are constituted by a porous substrate, a porous layer and a photocatalyst layer, the porous substrate may be constituted by a net or mesh of wires or a perforated sheet (c. 5, l. 12-18 and l. 39-49). Ogata discloses in paragraph crossing c. 1 and 2 that "[w]hen the fluid is brought in contact with a semiconductor photocatalyst, active radicals generated by the semiconductor photocatalyst oxidatively decompose pollutants". Ogata further discloses in Fig. 3 the porous filter plate is corrugated (read as pleated), and in c. 9, l. 15-26 that the UV light source may be a lamp having a wavelength of 360-390 nm, such as a black light, a fluorescent light, etc., and both ends of the UV light source are supported by sockets. The differences between Ogata and claim 18 are the provision of the UV light with the recited wavelength, the recited mechanically coupled arrangement of the porous filter to the UV light source, the provision of porous filter plates shown in the form of a pleat around the UV light source, and the number of perforations.

As to the first difference, Speer, a reference cited in the last Office action, teaches in a device for treating fluids via photolytic and photocatalytic reactions the provision of the recited UV light source (c. 6, l. 31-46). The subject

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matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Ogata's teachings as shown by Speer because the selection of any of known equivalent UV light sources as shown by Speer would have been within the level of ordinary skill in the art.

As to the second difference, Kim, another reference cited in the last Office action, teaches in a device for air purification the arrangement of a photocatalytic structure around to a UV light source such that the UV light source is mounted between a pair of support and the photocatalytic target structure is supported by the pair of support with the UV light source positioned therein (p. 7, l. 29-35). The pair of the support reads on the recited mechanically coupled arrangement. As such the selection of any of known equivalent supports to commonly support Ogata's porous filter plates and UV light source would have been within the level of ordinary skill in the art.

As to the third difference, Goswami teaches in an air cleaner with a photocatalyst the provision of a photocatalyst filter with a pleated surface or a finned surface around a UV light source to increase the surface of the photocatalyst (Fig. 20). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Ogata's as shown by Goswami because this would result in

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increasing the photocatalytic surface area and hence increasing the removing of pollutants in the gas.

As the fourth difference, since Ogata discloses in c. 5, l. 20-38 that the porous substrate 20 of the porous filter plate 2 has a lot of pores 21 through which a fluid containing pollutants passes, the porous layer 23 covers sufficiently the pores 21, and the flow rate of the fluid stream is maximum, the selection of pores' percentage would have been within the level of ordinary skill in the art.

As to the subject matter of each of claims 28-33, Speer teaches the limitation (c. 8, l. 16-18 and 30-36). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Say's teachings as shown by Speer because this would protect the UV light source from the fluid.

7. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata '631 in view of Speer '963, Kim '497 and Goswami '702 as applied to claims 18-24 and 28-33 above, and further in view of Say et al. (Us Pat. No. 6,063,343) and Miller (US 6,053,968), both references in the last Office action. The differences between the references as applied above and the instant claims is the provision of the recited fiber optic cable. Say teaches in a device for photocatalytic fluid purification the provision of sensors to warn a user of the non-operational UV light source where the sensor is a photodiode and may

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generate an automatic service notification such as a visual alarm (paragraph crossing c. 7 and 8). Miller teaches in a device for photocatalytic fluid purification the provision of an UV light status indicator of a fiber optic cable for indicating operational status of a UV light source (c. 5, l. 41-46). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the references' teachings as shown by Say and Miller because this would result in indicating the operational of the UV light source. The same is applied to claims 25 and 26 since Miller teaches that the indicator is optically shielded to prevent direct exposure to UV light.

8. Claims 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata '631 in view of Speer '963, Kim '497, Goswami '702, Say '343 and Miller '968, for the same reasons as stated in the preceding paragraphs #6 and #7 above and further of Ogata's teachings in c. 6, l. 52-65.

As to the subject matter of claim 52, Kim teaches the provision of a power supply for applying power to the UV light source and a switch to control the power supply (page 3, 2nd and 3rd full paragraphs). Say teaches in examples different input power. As such, it appears that the power supply of Kim or Say is adjustable.

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9. Claims 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Say '343 in view of Ogata '631 in view of Speer '963, Kim '497, Goswami '702, Say '343 and Miller '968 as applied to claims 49-52 above, and further in view of Schaible et al. (US 6,972,415 B2), another reference cited in the last Office action. The differences between the references as applied above and the instant claims are the limitation recited in each of the instant claims. Schaible teaches in a system for treating fluid with UV light the limitations (Fig. 1). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the references' teachings as shown by Schaible because the selection of any of known equivalent sensor arrangements would have been within the level of ordinary skill in the art.

Response to Arguments

10. Applicant's arguments filed 30 November 2009 have been fully considered but they are not persuasive because of the new grounds of rejections as set forth in the paragraphs above.

Conclusion

11. Claims 18-33 and 49-55 are rejected.